

REMARKS

Claims 1-10 and 13-61 are pending in this application. Applicants acknowledge, with appreciation, the Examiner's allowance of claims 29-37 and 39-61.

In this Amendment, claims 1, 2, and 16-61 have been amended. Care has been exercised to avoid the introduction of new matter. Support for the present Amendment should be apparent throughout the originally filed disclosure as, for example, the depicted embodiments and related discussion thereof in the written description of the specification.

Claim Objections

Objection has been made to the claims. Claims 1 and 16-61 have been amended in consideration of the Examiner's suggestions. Applicants believe these amendments are fully responsive to the Examiner's concerns. Withdrawal of the objection to the claims is, therefore, respectfully solicited.

Claims 21 and 39 have been rejected under 35 U.S.C. §112, second paragraph.

The Examiner asserted that claims 21 and 39 are indefinite. Applicants have amended claims 21 and 39 to clarify the claimed subject matter (see, e.g., Fig. 13 for claim 21, and Fig. 29 for claim 39). Withdrawal of the rejection of claims 21 and 39 under 35 U.S.C. §112, second paragraph is, therefore, respectively solicited.

Claims 1-4, 7, 8, 15-17, 20, 24-26, 28, and 38 have been rejected under 35 U.S.C.

§102(b) as being anticipated by Parker et al.

The Examiner asserted that Parker et al. discloses a method of producing a silicon film with micropores identically corresponding to what is claimed.

Applicants submit that Parker et al. does not identically disclose a filter including all the limitations recited in independent claim 1. Specifically, the reference does not disclose, among other things, the following limitations of claim 1:

a porous semiconductor layer having a light emitting property by electroluminescence, cathode luminescence, or photoluminescence, and having continuous pores, ...

the porous semiconductor layer comprises a material selected from a group consisting of GaN, AlN, ZnO, ZnF₂, and diamond.

Parker et al. teaches a method of preparing porous filter in which a polycrystalline silicon film formed on a porous substrate by vapor deposition is anodized to make the silicon film porous, and then, is oxidized to reduce the size of the pores. Alternatively, a monocrystalline silicon film is anodized to form a porous silicon film, the porous film is peeled off, the porous film is oxidized to reduce the size of the pores, and the porous film is adhered to a porous substrate.

Parker et al. selects either polycrystalline silicon or monocrystalline silicon for the reason described in column 1, lines 19-25:

It is well known in the art that a silicon surface may be etched, oxidized, anodized, and bombarded with ions. Advances in silicon processing have concentrated on improved control of surface modification steps, because silicon's good physical properties allow custom-tailoring of its surface contours. For example, the formation of pores has been of particular interest.

It appears that Parker selects silicon crystals only for the readiness of manipulating and altering silicon surface morphology by various methods. This clearly differs from the claimed subject

matter in which compounds other than silicon crystals are employed for the light emitting porous semiconductor layer. Selections of the materials for the claimed porous filter may be directed to light emitting properties, but is not directed to easier formation of pores or other surface manipulations.

Parker's filter comprises porous semiconductor layer having continuous pores on top of a porous substrate having continuous pores. However, Parker fails to disclose a function such as a light emitting function including UV emission and photo catalysis for sterilizing and decomposing organic matter.

In the Office Action, the Examiner asserted as follows (page 5 of the Office Action):

The preamble statement "for filtering, sterilizing, and decomposing organic matter" recites the purpose or intended use but does not impose distinct limitations beyond what is recited in the body of the claim.

The functional language "having a light emitting function that works by electroluminescence, cathode luminescence, or photo luminescence" does not structurally limit the apparatus claim but merely describes what a device does.

The Examiner considers the limitation "having a light emitting function ..." as a functional limitation. Applicants have amended the limitation to --having a light emitting property by electroluminescence, cathode luminescence, or photoluminescence--, in order for the Examiner not to consider the limitation to be functional.

The Examiner further insisted, "[n]evertheless, this property is present in the device of Parker, being an inherent property of the disclosed material" (page 5 of the Office Action). Even if this assertion is assumed proper for the sake of this response, Parker et al. does not disclose "the porous semiconductor layer comprises a material selected from a group consisting of GaN, AlN, ZnO, ZnF₂, and diamond.

Based on the foregoing, Applicants submit that Parker et al. does not identically disclose a filter including all the limitations recited in independent claim 1. The above discussion is applicable to independent claim 16 reciting “said semiconductor particles having a light emitting property comprising a material selected from a group consisting of GaN, AlN, ZnO, ZnF₂, and diamond” and claim 25 reciting “said semiconductor particles having a light emitting property comprises a material selected from a group consisting of GaN, AlN, ZnO, ZnF₂, and diamond.” Dependent claims 2-4, 7, 8, 15-17, 20, 24, 26, 28, and 38 are also patentably distinguishable over Parker et al. at least because these claims respectively include all the limitations recited in independent claims 1, 16, and 25. Applicants specifically address claims 2, 25, and 26.

Regarding claim 2, the Examiner asserted that limitation “emits ultraviolet light” is functional language. On that basis, the Examiner concluded that the limitation does not structurally limit the apparatus claim but merely describes what a device does. Applicant has amended claim 2, and respectfully request the Examiner to give patentable weight to the limitation.

With respect to independent claim 25, the Examiner asserted that the product-by-process limitation “wherein the porous semiconductor layer is formed by depositing semiconductor particles having a light emitting function on a surface of the porous substrate and having a diameter of 0.01 to 5 μ m” does not structurally distinguish from the product of the prior art. The limitation has been amended in consideration of the Examiner’s assertion. Applicants respectfully request the Examiner to consider the limitation of claim 25.

As to claim 26, the Examiner asserted that the recitation “for injecting current” is a statement of intended use but does not structurally limit the apparatus claim. Claim 26 has been

amended to clarify the claimed subject matter. Applicants respectfully request the Examiner to consider the limitation of claim 26.

Accordingly, claims 1-4, 7, 8, 15-17, 20, 24-26, 28, and 38 are not anticipated by Parker et al., and Applicants respectfully solicit withdrawal of the rejection of the claims under 35 U.S.C. §102(b) and favorable consideration thereof.

Claims 6, 13-15, 18, and 21 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Parker et al.; claims 5, 19, 22, and 27 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Parker et al. in view of Shor et al.; and claims 9, 10, and 23 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Parker et al. in view of Shor et al., Robertson et al., and Ogata et al.

Claims 5, 6, 9, 10, and 13-15 depend from claim 1, claims 18, 19, and 21-23 depend from claim 16, and claim 27 depends from claim 25. Applicants incorporate herein the arguments made in response to the rejection of claims 1, 16, and 25 under 35 U.S.C. §102 for anticipation evidenced by Parker et al. The Examiner's additional comments and reference Shor et al., Robertson et al., and Ogata et al. do not cure the deficiencies of Parker et al.

Applicants, therefore, respectfully solicit withdrawal of the rejections of the claims under 35 U.S.C. §103(a), and favorable consideration thereof.

Conclusion

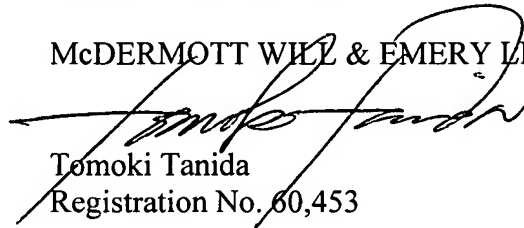
It should, therefore, be apparent that the imposed rejections have been overcome and that all pending claims are in condition for immediate allowance. Favorable consideration is, therefore, respectfully solicited.

Application No.: 10/500,975

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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A handwritten signature in black ink, appearing to read 'Tomoki Tanida', is written over the printed name and registration number.

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